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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/943,644	08/30/2001	Dennis W. Smith	CXU-363	9437

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EXAMINER
ANGEBRANNDT, MARTIN J

ART UNIT	PAPER NUMBER
1756	10

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

A9-10

Office Action Summary	Application N .	Applicant(s)	
	09/943,644	SMITH ET AL.	
	Examiner	Art Unit	
	Martin J Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2003 and 02 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19,22-26,28-30 and 32-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19,22-26,28-30 and 32-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *7 & 9* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

1. The response provided by the applicant has been read and given careful consideration. Responses to the argument of the applicant are presented after the first rejection to which they are directed. The examiner would like to point out that it has been held in the courts that the "applicant has [an] obligation to call the most pertinent prior patent to [the] attention of [the] Patent Office in a proper fashion." [Penn Yan Boats, Inc. V. Sea Lark Boats, Inc., et al. 175 USPQ 260 (DC SFla 1972)]. The examiner would appreciate the applicant identifying why the cited reference is pertinent including relevant portions of the document cited.

2. The applicant states that the instant application is related to application 09/604,748, filed 27, June 2000. The declaration should reflect if this is a continuation, continuation in part or divisional if the applicant seeks to gain the benefit of priority to the earlier filed application. It is not clear if the applicant is merely exercising their duty to disclose related applications (or prior art) or actually claiming priority.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. The specification is objected to under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The changes to table 2 on page 14 and the amendments to pages 15-17 are not obvious errors and cannot be "corrected" in the manner attempted by the applicant. The only mode available for this "correction" would be the filing of a CIP.

The unsupported new matter must be removed in the next response.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 28 at line "second perfluoro**cylco**butyl-based" is mispelled

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 29 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shah et al. "Perfluorocyclobutane "PFCB) polymers for optical fibers and waveguides", Polymer Preprints, Vol. 40(2) pp. 1293-1294 (1999).

See the polymerization solutions, the final product of which meets the claim limitations. The formation of the polymer TVE-co-BPVE is disclosed with respect to figure 3 and table 1. The refractive indices of the different polymers are also disclosed.

The examiner holds that the cast solutions or the melts, which are partially cured and have a portion of the original solvent removed by evaporation or the like are embraced by the claims meet the claims as no difference would be found merely due to the difference in the weight % of solids in the solution.

10. Claims 29,30,32 and 45-47 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shah et al. "Perfluorocyclobutane "PFCB) polymers for optical fibers and waveguides", Polymer Preprints, Vol. 40(2) pp. 1293-1294 (1999).

The disclosure of the prethermoset oligomeric solutions being spin coated or melt processed and then finally cured by baking at 235-325 degrees is disclosed. (page 1293, right column). The use of mesitylene as the solvent with a weight of 50% is disclosed. (page 1293, right column). The formation of the polymer TVE-co-BPVE is disclosed with respect to figure 3 and table 1. The use of these polymers in optical waveguides is disclosed throughout.

The instant specification teaches heat curing at 120-350 degrees C after spin coating. (Table 1 and 14/22-25) The description of the prethermoset oligomeric solutions being spin coated or melt processed and then finally cured by baking at 235-325 degrees under air or nitrogen for several hours depending upon the application is disclosed in a single paragraph, but it is not clear if this is indicative of this process having been carried out with the copolymer TVE-co-BPVE or merely represents basic instruction on possible use. Therefore, the examiner holds the position that the text cited either anticipates the claimed invention based upon the spin coated solutions during their curing, where the solvent is at least partially removed, or alternatively renders it obvious through these instructions for it's use.

11. Claim 29 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Smith et al., "Perfluorocyclobutane (PFCB_ polyaryl ethers: versatile coatings materials", J. fluorine Chem., Vol. 104(1) pp 109-117 (mailed 5/30/2000 and on-line 5/19/2000).

The formation of the prethermoset oligomeric solutions of 1-co-2 are taught with respect to figure 4-6. The use of these polymers in optical waveguides is disclosed throughout. Useful aryl ether linkages are taught in scheme 2 (page110) and scheme 3 (page 112). The disclosure of the prethermoset oligomeric solutions being spin coated or melt processed and then finally cured by baking at 235-325 degrees is disclosed. (page 110, right column). The use of mesitylene as the solvent and spin coating to thicknesses of of 3-6 microns is also disclosed. (page 110, right column). The use of 50 wt. % mesitylene as the solvent is disclosed. (page 114, left column). The refractive indices of the different polymers are also disclosed.

The examiner holds that the cast solutions or the melts, which are partially cured and have a portion of the original solvent removed by evaporation or the like are embraced by the claims meet the claims as no difference would be found merely due to the difference in the weight % of solids in the solution.

12. Claims 29,30,32 and 45-47 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Smith et al., "Perfluorocyclobutane (PFCB) polyaryl ethers: versatile coatings materials", J. fluorine Chem., Vol. 104(1) pp 109-117 (mailed 5/30/200 and on-line 5/19/2000).

The description of the prethermoset oligomeric solutions being spin coated to 3-6 microns and then finally cured by baking at 235-325 degrees under air or nitrogen for several hours depending upon the application is disclosed in a single paragraph, but it is not clear if this

is indicative of this process having been carried out with the copolymer TVE-co-BPVE (1-co-2) or merely represents basic instruction on possible use. Therefore, the examiner holds the position that the text cited either anticipates the claimed invention, or alternatively renders it obvious through these instructions for it's use with a coating of up to 6 microns in thickness.

Therefore, the examiner holds the position that the text cited either anticipates the claimed invention based upon the spin coated solutions during their curing, where the solvent is at least partially removed, or alternatively renders it obvious through these instructions for it's use.

13. Claims 29,30,32 and 45-47 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Babb et al. '164 .

See example 2 which make a copolymer of 4,4'-bis(trifluoroethylenyloxy)-alpha-methylstilbene and 1,1,1-tris(4'-trifluoroethylenyloxyphenyl)ethane (TVE) and the crosslinking thereof and where the polymer solution uses 1 g of polymer to 10 ml of benzene (8.787g) and the benzene is evaporated. The specific direction to copolymerize is taught at col. 19/lines 7-19. The use of the term polymer to embrace oligomers is disclosed. (3/3-7).

The examiner holds that the drying cast solution meets the claims limitations.

14. Claims 29,30,32 and 45-47 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Babb et al. '038.

See examples 10 and 11 which make a copolymer of 4,4'-bis(trifluorovinyloxy)biphenyl and 1,1,1-tris(4'-trifluorovinyloxyphenyl)ethane (TVE) and the crosslinking thereof where the methylene chloride is evaporated.

The examiner holds that the drying cast solution meets the claims limitations. The examiner also notes that in contradiction to the argument concerning the properties, the reference specifically states the the trifunctional monomer , 1,1,1-tris(4'-trifluorovinyloxyphenyl)ethane ... is useful aone or mixed with a bifunctional monomer ...."(19/16-20). The examiner notes that the results described by the applicant are not the only possible result, noting that the polymer of example 11 is strong and flexible. **Further, the applicants have not just discovered the argued properties, disclosed these properties in the instant specification or shown how they might be relevant to the inventions claimed.** The examiner also notes that Babb et al., "Novel Step growth polymers ...."Chapter 28, pp. 431-441, ACS symposium series No. 624 (1996) added to the record in the IDS of 4/02/2003 specifically describes increased flexibility of copolymers in the last paragraph of page 437 and table III on page 439 and therefore this is already appreciated in the prior art.

15. Claims 1-17,19,22-26,29,30,32,33,35,36 and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al., "Perfluorocyclobutane (PFCB) polyaryl ethers: versatile coatings materials", J. fluorine Chem., Vol. 104(1) pp 109-117 (mailed 5/30/200 and on-line 5/19/2000), Babb et al. '164 or Babb et al. '038, in view of Kennedy et al. '782.

Kennedy et al. '782 teaches various coating processes for PFCB polymers including spin coating (spinning) and dip coating (15/9-55) The effects of the percent solids in the coating process and spinning speed on the thickness of the resulting coating is disclosed. Thicknesses of up to 24.53 microns are shown with spin coating of solutions with 70% solids and 8.31 microns for solutions with 60% solids. (table 5, column 36).

It would have been obvious to one skilled in the art to coat other TVE-PFCB polymers, such as those disclosed by Smith et al., "Perfluorocyclobutane (PFCB) polyaryl ethers: versatile coatings materials", J. fluorine Chem., Vol. 104(1) pp 109-117 (mailed 5/30/200 and on-line 5/19/2000), Babb et al. '164 or Babb et al. '038, to the thicknesses disclosed as useful by Kennedy et al. '782 with a reasonable expectation of forming a desirable PFCB coating useful in electronics or the like.

The applicant argues as if the advantages of using high solids coatings was not appreciated. Clearly, the Kennedy et al. '782 reference teaches that slower spinning speeds during coating and increased percentage of solids increases the viscosity and therefore the thickness of the resultant coating. The examiner notes that this is the same trend shown in figure 3 of the instant application. The examiner notes that contrary to the arguments, Kennedy et al. '782 discloses the use of coating solutions of 70% solids within the PFCB polymer art and therefore this cannot be reasonably argued as surprising or unprecedented within the art. **The fact that the same trend is found in the instant application and the Kennedy et al. '782 reference significantly undercuts the applicant's argument of unobviousness.** The clear advantage and motivation within Kennedy et al. '782 to use high solids solutions is thicker coatings, which would be advantageous in the same manner with the compositions of the primary references. The rejection stands.

16. Claims 1-17,19,22-26,29,30,32,33,35,36 and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al., "Perfluorocyclobutane (PFCB) polyaryl ethers: versatile coatings materials", J. fluorine Chem., Vol. 104(1) pp 109-117 (mailed 5/30/200 and on-line 5/19/2000), Babb et al. '164 or Babb et al. '038 in view of Kennedy et al. '782 and Fischbeck et

al., "Singlemode optical wavguides using high temperature stable polymer with low losses in the 1.55 micron range", Electron. Lett., Vol. 33(6) pp. 518-519 (03/1997).

Fischbeck et al., "Singlemode optical wavguides using high temperature stable polymer with low losses in the 1.55 micron range", Electron. Lett., Vol. 33(6) pp. 518-519 (03/1997) teaches optical waveguide coatings of 10 micron for TVE -PFCB polymers.

It would have been obvious to one skilled in the art to coat other TVE-PFCB polymers, such as those disclosed by Smith et al., "Perfluorocyclobutane (PFCB) polyaryl ethers: versatile coatings materials", J. fluorine Chem., Vol. 104(1) pp 109-117 (mailed 5/30/200 and on-line 5/19/2000), Babb et al. '164 or Babb et al. '038, to the thicknesses disclosed by Fischbeck et al., "Singlemode optical waveguides using high temperature stable polymer with low losses in the 1.55 micron range", Electron. Lett., Vol. 33(6) pp. 518-519 (03/1997) to evaluate their optical properties and potential as waveguiding materials based upon the desirable properties evidenced in Fischbeck et al., "Singlemode optical waveguides using high temperature stable polymer with low losses in the 1.55 micron range", Electron. Lett., Vol. 33(6) pp. 518-519 (03/1997) and further, the thickness of the waveguide layer required by Fischbeck et al., "Singlemode optical wavguides using high temperature stable polymer with low losses in the 1.55 micron range", Electron. Lett., Vol. 33(6) pp. 518-519 (03/1997) is congruent with the direction in Kennedy et al. '782 to high solids coatings to form thicker coatings.

The rejection stands for the reasons provided above, with the additional emphasis on the teachings of Fischbeck et al., "Singlemode optical wavguides using high temperature stable polymer with low losses in the 1.55 micron range", Electron. Lett., Vol. 33(6) pp. 518-519

(03/1997) concerning the desirability of thicker coatings for TVE -PFCB polymer films when used in optical waveguides.

17. Claims 1-19,22-26,28-30 and 32-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al., "Perfluorocyclobutane (PFCB) polyaryl ethers: versatile coatings materials", J. fluorine Chem., Vol. 104(1) pp 109-117 (mailed 5/30/200 and on-line 5/19/2000), Babb et al. '164 or Babb et al. '038 in view of Kennedy et al. '782, Fischbeck et al., "Singlemode optical wavguides using high temperature stable polymer with low losses in the 1.55 micron range", Electron. Lett., Vol. 33(6) pp. 518-519 (03/1997), further in view of Shacklette et al. '498, Shaw et al. "Fluoropolymer nanotube composites for coatings and nonoscopic probes", Polym. Mater. Sci. & Eng., (ASC div PMSC) 2000 Vol. 82, pp 300 and Kaneko et al. '307.

Shacklette et al. '498 teaches the use of upper cladding layers for optical waveguides. (figure 1,1a and 13/10). The thinkness of the core layer is 5 to 500 microns and the cladding layer is at least 3 microns. (9/59-11/65).

Shaw et al. "Fluoropolymer nanotube composites for coatings and nonoscopic probes", Polym. Mater. Sci. & Eng., (ASC div PMSC) 2000 Vol. 82, pp 300 teaches the refractive indices of the polymers and copolymers.

Kaneko et al. '307 teaches that the polymers used in the core and cladding layers may be the same materials or different, but that the cured polymer must have a refractive index less than that of the cured polymer core. (7/65-67 and 8/10-14). The use of cladding layers of 15 microns is disclosed (16/22-31).

In addition to the basis provided above, the examiner holds that it would have been obvious to add a upper cladding layer (the substrate acts as the lower cladding layer) in the

invention resulting from the combination of either Smith et al., "Perfluorocyclobutane (PFCB) polyaryl ethers: versatile coatings materials", J. fluorine Chem., Vol. 104(1) pp 109-117 (mailed 5/30/200 and on-line 5/19/2000), Babb et al. '164 or Babb et al. '038 with Kennedy et al. '782 and Fischbeck et al., "Singlemode optical wavguides using high temperature stable polymer with low losses in the 1.55 micron range", Electron. Lett., Vol. 33(6) pp. 518-519 (03/1997) to improve the waveguiding properties of the resultant articles by reducing TIR losses by providing a Perfluorocyclobutane (PFCB) polyaryl ether copolymeric cladding layer with a reasonable expectation of success as it is known in the art to use the same materials for the core and cladding layer as evidenced by Kaneko et al. '307 and the refractive indices of the copolymers can be varied within the range set by the individual homopolymers as shown by Shaw et al. "Fluoropolymer nanotube composites for coatings and nonoscopic probes", Polym. Mater. Sci. & Eng., (ASC div PMSC) 2000 Vol. 82, pp 300.

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

New claims

17 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranndt whose telephone number is 703-308-4397. The examiner can normally be reached on Mondays-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703-308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Martin J Angebranndt
Primary Examiner
Art Unit 1756

April 18, 2003